

WHAT IS CLAIMED IS:

1. A mobile station transmitter for transmitting a data frame in a mobile communication system during a time duration when there is no transmission message transmitted from a mobile station to a base station, comprising a dedicated control channel (DPCCH) including at least a power control signal, said data frame having a plurality of time slots and being transmitted over said dedicated control channel, wherein each time slot in the data frame further comprises a first slot duration and a second slot duration, wherein the first slot duration contains said power control signal and the second slot duration contains no signal during at least a partial duration thereof.

2. A method for transmitting control information in a mobile station of a mobile communication system which transmits the control information filled in a frame on a dedicated control channel, the frame being divided into a plurality of slots, the method comprising the steps of:

determining whether there is data to transmit to a base station; and gating transmission of the control information in a partial duration of a predetermined one of the slots when there is no data to transmit for a predetermined time.

3. The method as claimed in claim 2, wherein the control information includes a power control signal.

4. The method as claimed in claim 2, wherein the control information includes pilot symbols, TFCI bits, and FBI bits for a phase difference between at least two transmit diversity antennas used by the base station.

5. A mobile station transmitter for a mobile communication system, comprising:

- a dedicated control channel (DPCCH) for transmitting control information
- 5 including a power control signal;
- a dedicated data channel (DPDCH) for transmitting user data or signaling data;
- a switch for gating a signal on the dedicated control channel; and
- a controller for gating the switch such that when there is no dedicated data
- 10 channel signal to be transmitted to a base station for a predetermined time, the control information is transmitted in a partial duration of a predetermined one of slots constituting a frame.

6. The mobile station transmitter as claimed in claim 5, wherein the

15 control information includes pilot symbols, TFCI bits, and FBI bits for a phase difference between at least two transmit diversity antennas used by the base station.